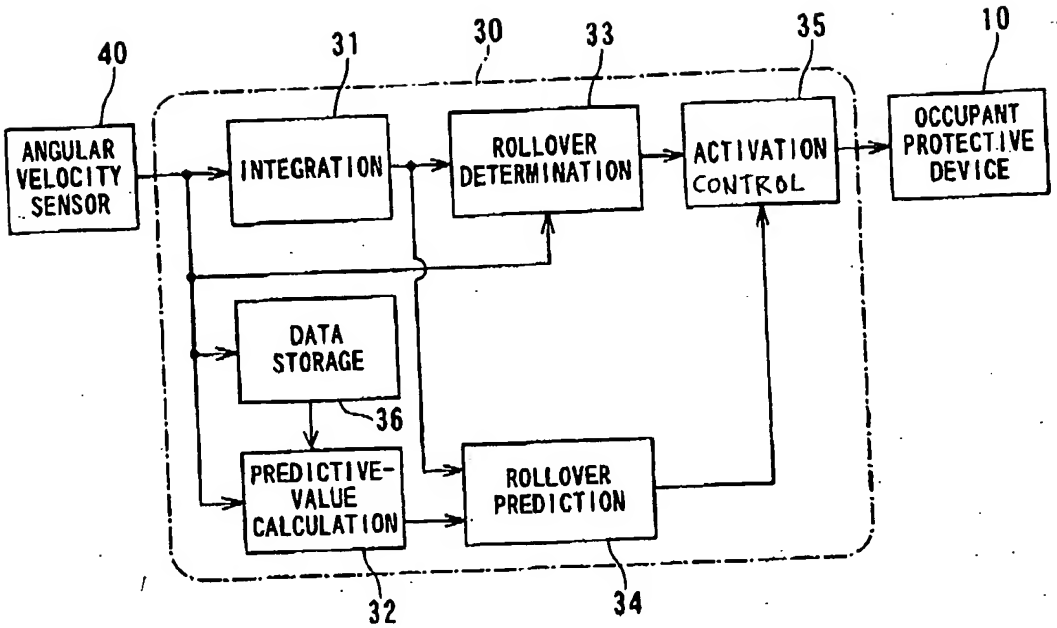

40
31
30
33
35
10
ANGULAR VELOCITY SENSOR
INTEGRATION
ROLLOVER DETERMINATION
ACTIVATION CONTROL
OCCUPANT PROTECTIVE DEVICE
DATA STORAGE
36
PREDICTIVE-VALUE CALCULATION
ROLLOVER PREDICTION
32
34

FIG. 1

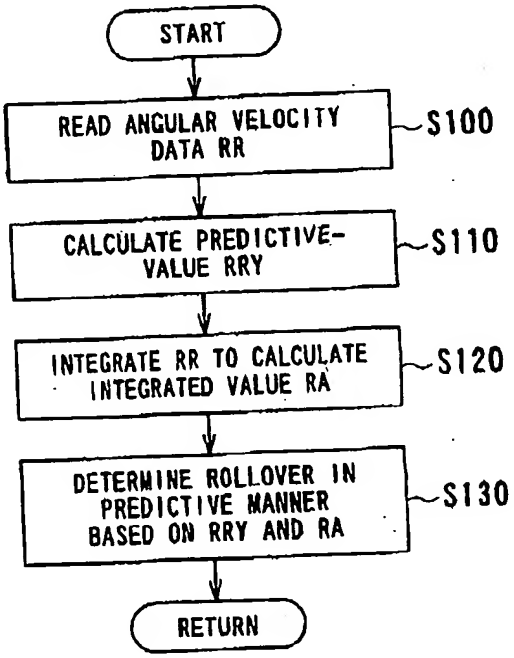

START
READ ANGULAR VELOCITY DATA RR
S100
CALCULATE PREDICTIVE-VALUE RRY
S110
INTEGRATE RR TO CALCULATE INTEGRATED VALUE RA
S120
DETERMINE ROLLOVER IN PREDICTIVE MANNER BASED ON RRY AND RA
S130
RETURN

FIG. 2

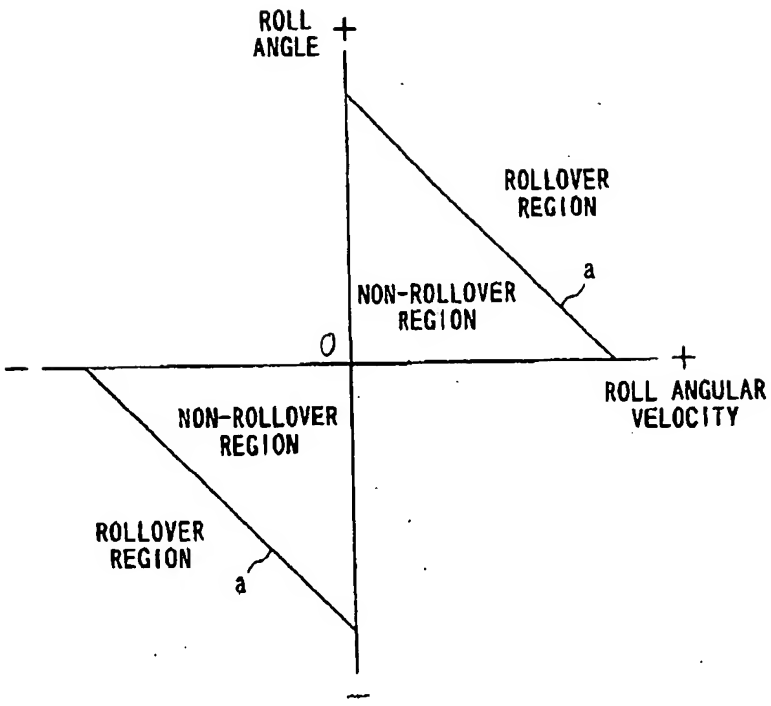

ROLL ANGLE
+
ROLLOVER REGION
a
NON-ROLLOVER REGION
0
+
ROLL ANGULAR VELOCITY
NON-ROLLOVER REGION
ROLLOVER REGION
a
−

FIG. 3

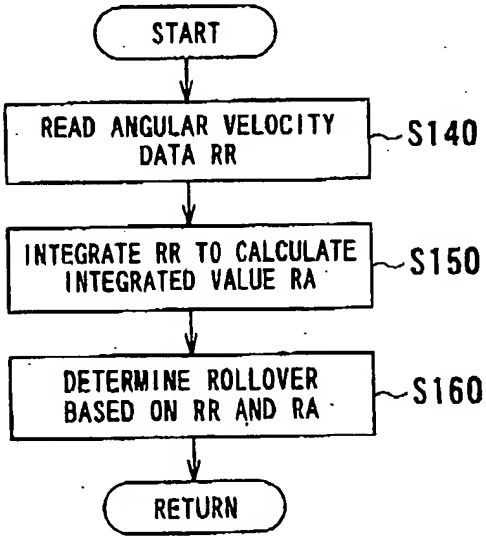

START
READ ANGULAR VELOCITY DATA RR
S140
INTEGRATE RR TO CALCULATE INTEGRATED VALUE RA
S150
DETERMINE ROLLOVER BASED ON RR AND RA
S160
RETURN

FIG. 4

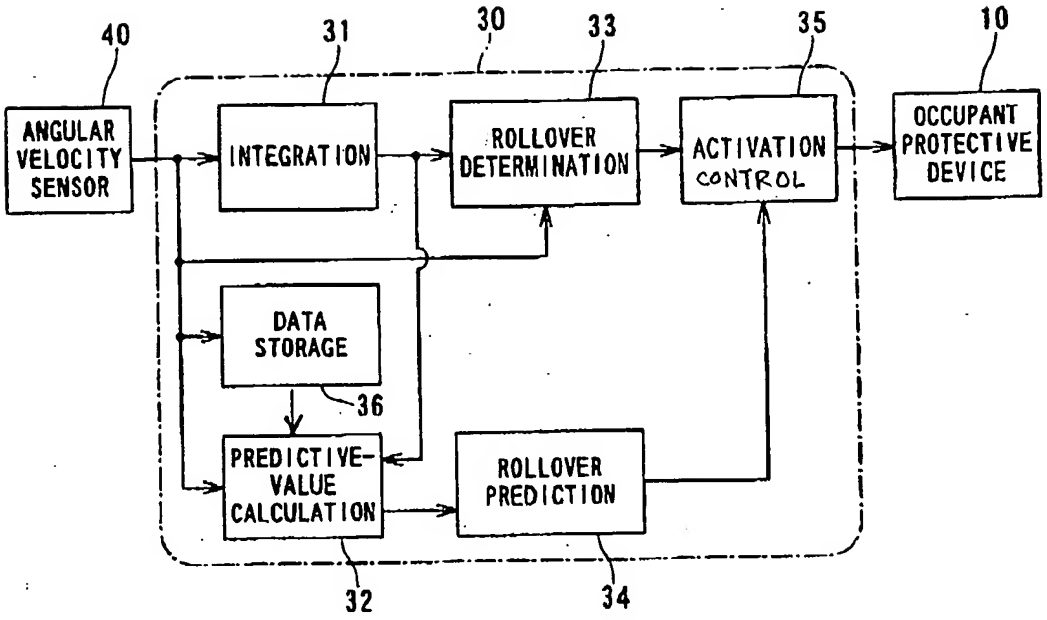

40
31
30
33
35
10
ANGULAR VELOCITY SENSOR
INTEGRATION
ROLLOVER DETERMINATION
ACTIVATION CONTROL
OCCUPANT PROTECTIVE DEVICE
DATA STORAGE
36
PREDICTIVE-VALUE CALCULATION
ROLLOVER PREDICTION
32
34

FIG. 5

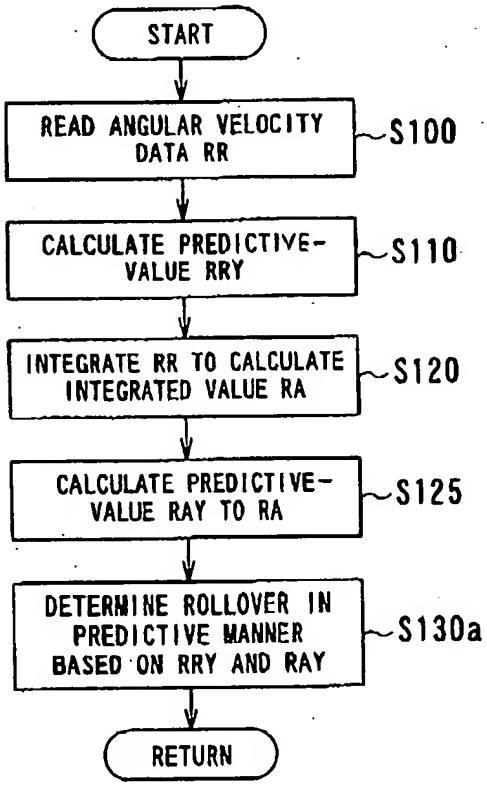

START
READ ANGULAR VELOCITY DATA RR
S100
CALCULATE PREDICTIVE-VALUE RRY
S110
INTEGRATE RR TO CALCULATE INTEGRATED VALUE RA
S120
CALCULATE PREDICTIVE-VALUE RAY TO RA
S125
DETERMINE ROLLOVER IN PREDICTIVE MANNER BASED ON RRY AND RAY
S130a
RETURN

FIG. 6

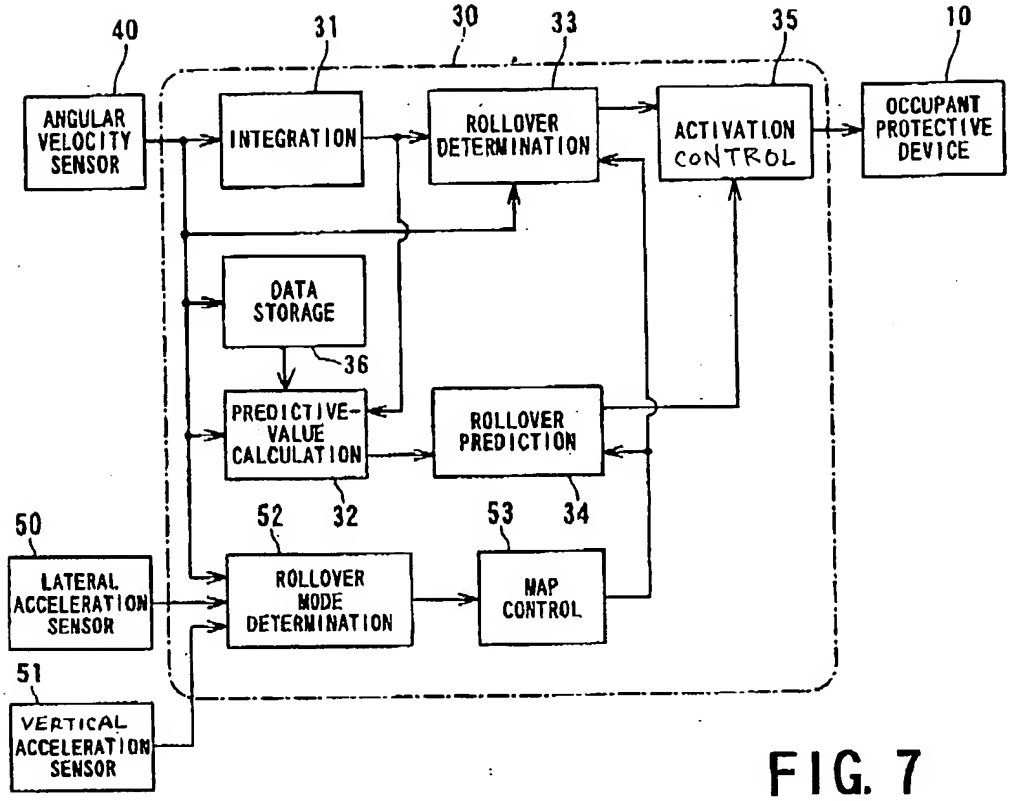

40
31
30
33
35
10
ANGULAR VELOCITY SENSOR
INTEGRATION
ROLLOVER DETERMINATION
ACTIVATION CONTROL
OCCUPANT PROTECTIVE DEVICE
DATA STORAGE
36
PREDICTIVE-VALUE CALCULATION
ROLLOVER PREDICTION
52
32
53
34
50
LATERAL ACCELERATION SENSOR
ROLLOVER MODE DETERMINATION
MAP CONTROL
51
VERTICAL ACCELERATION SENSOR

FIG. 7

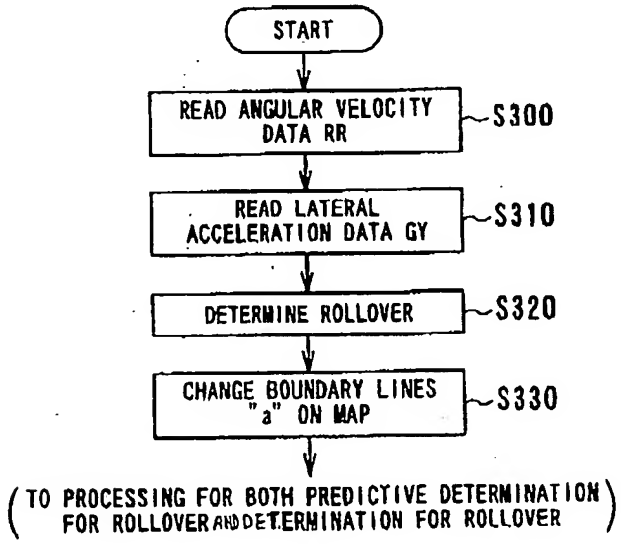

START
READ ANGULAR VELOCITY DATA RR
S300
READ LATERAL ACCELERATION DATA GY
S310
DETERMINE ROLLOVER
S320
CHANGE BOUNDARY LINES "a" ON MAP
S330
(TO PROCESSING FOR BOTH PREDICTIVE DETERMINATION FOR ROLLOVER AND DETERMINATION FOR ROLLOVER)

FIG. 8

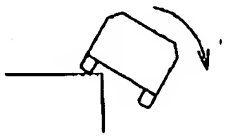
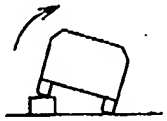
ROLLOVER MODE	ILLUSTRATION	FEATURES
FALL-OVER		LATERAL ACCELERATION :LOW VERTICAL ACCELERATION :LOW ANGULAR VELOCITY (RR) CHANGE :SMALL ANGULAR VELOCITY RR :LOW
FLIP-OVER		LATERAL ACCELERATION :LOW VERTICAL ACCELERATION :MEDIUM ANGULAR VELOCITY (RR) CHANGE :MEDIUM ANGULAR VELOCITY RR :MEDIUM
CURBSTONE TRIP-OVER		LATERAL ACCELERATION :HIGH VERTICAL ACCELERATION :MEDIUM ANGULAR VELOCITY (RR) CHANGE :LARGE ANGULAR VELOCITY RR :HIGH

FIG. 9

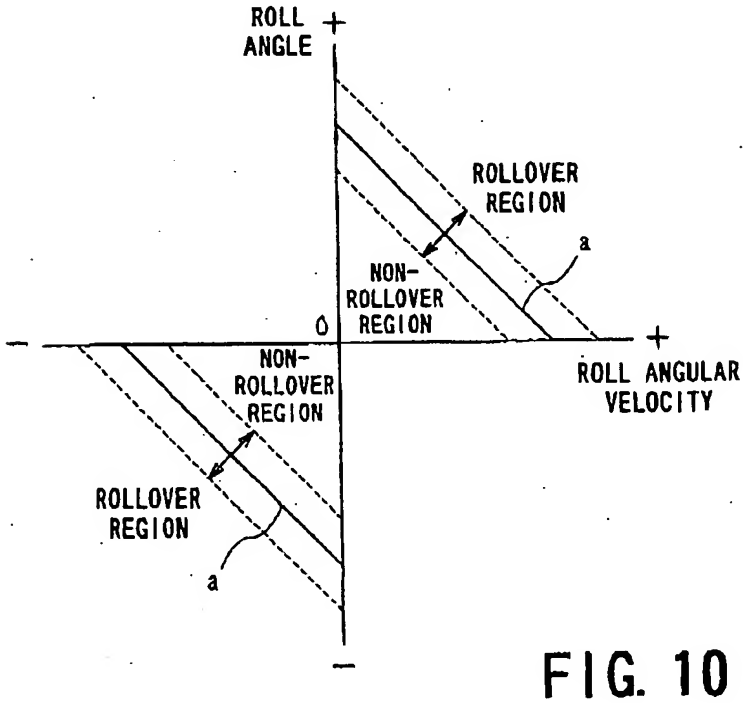


FIG. 10

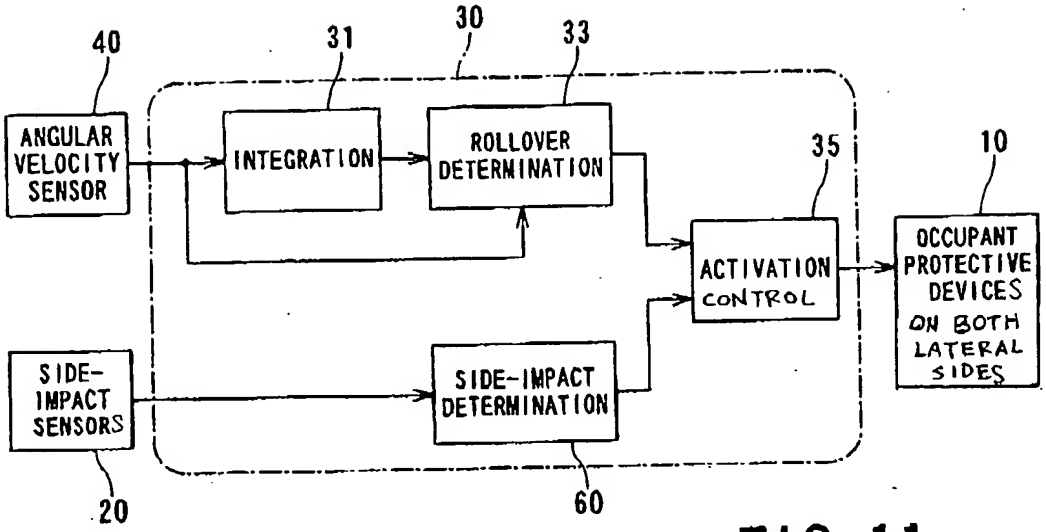

40
31
30
33
ANGULAR VELOCITY SENSOR
INTEGRATION
ROLLOVER DETERMINATION
35
10
ACTIVATION CONTROL
OCCUPANT PROTECTIVE DEVICES ON BOTH LATERAL SIDES
SIDE-IMPACT SENSORS
SIDE-IMPACT DETERMINATION
20
60

FIG. 11

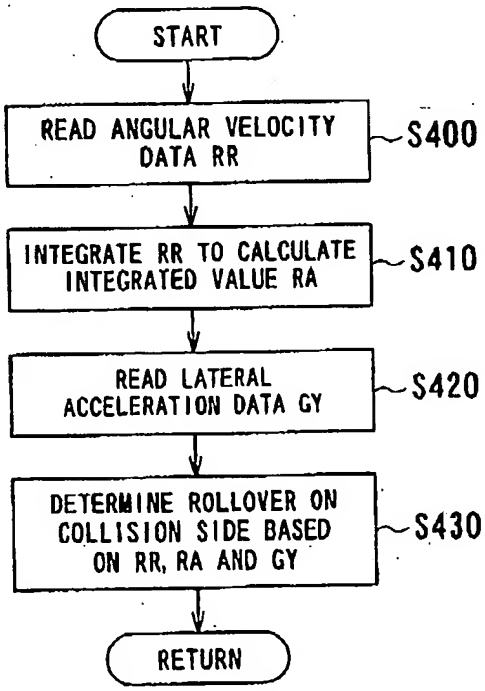

START
READ ANGULAR VELOCITY DATA RR
S400
INTEGRATE RR TO CALCULATE INTEGRATED VALUE RA
S410
READ LATERAL ACCELERATION DATA GY
S420
DETERMINE ROLLOVER ON COLLISION SIDE BASED ON RR, RA AND GY
S430
RETURN

FIG. 12

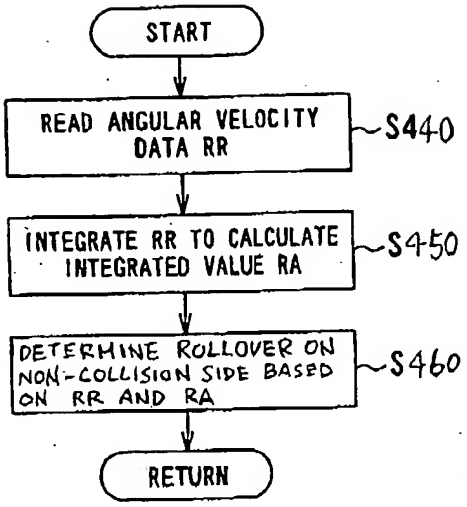

START
READ ANGULAR VELOCITY DATA RR
S440
INTEGRATE RR TO CALCULATE INTEGRATED VALUE RA
S450
DETERMINE ROLLOVER ON NON-COLLISION SIDE BASED ON RR AND RA
S460
RETURN

FIG. 13

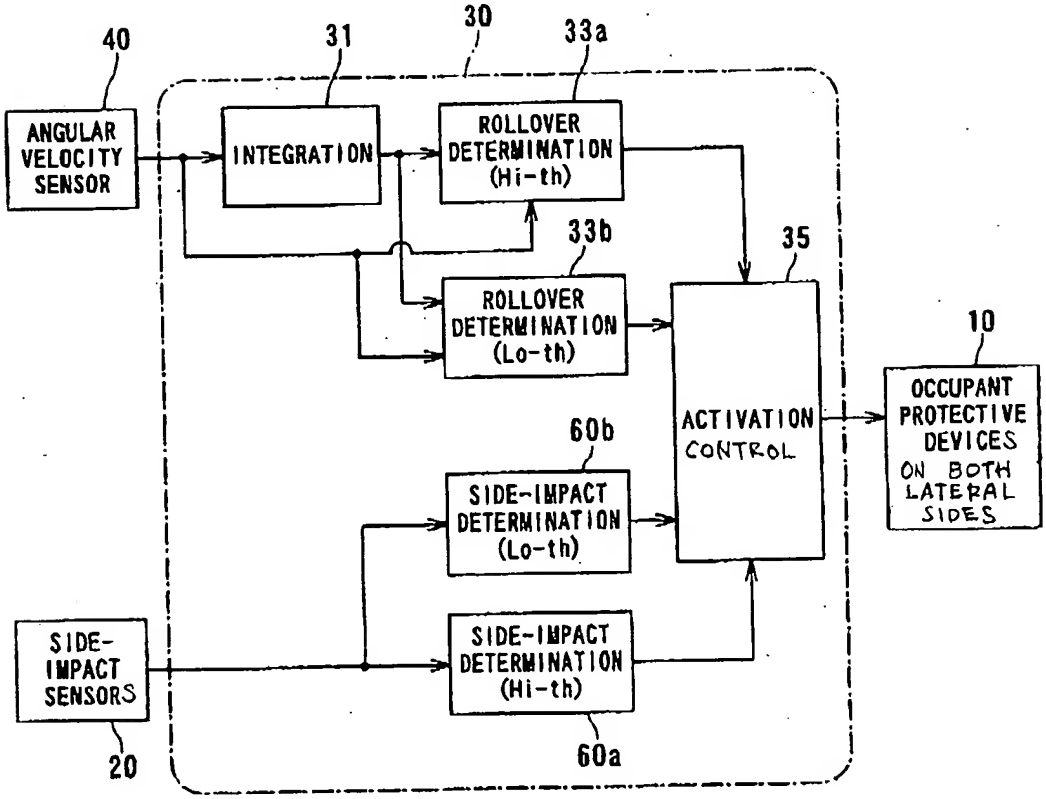

40
31
30
33a
ANGULAR VELOCITY SENSOR
INTEGRATION
ROLLOVER DETERMINATION (Hi-th)
33b
35
ROLLOVER DETERMINATION (Lo-th)
10
ACTIVATION CONTROL
OCCUPANT PROTECTIVE DEVICES ON BOTH LATERAL SIDES
60b
SIDE-IMPACT DETERMINATION (Lo-th)
SIDE-IMPACT SENSORS
SIDE-IMPACT DETERMINATION (Hi-th)
20
60a

FIG. 14

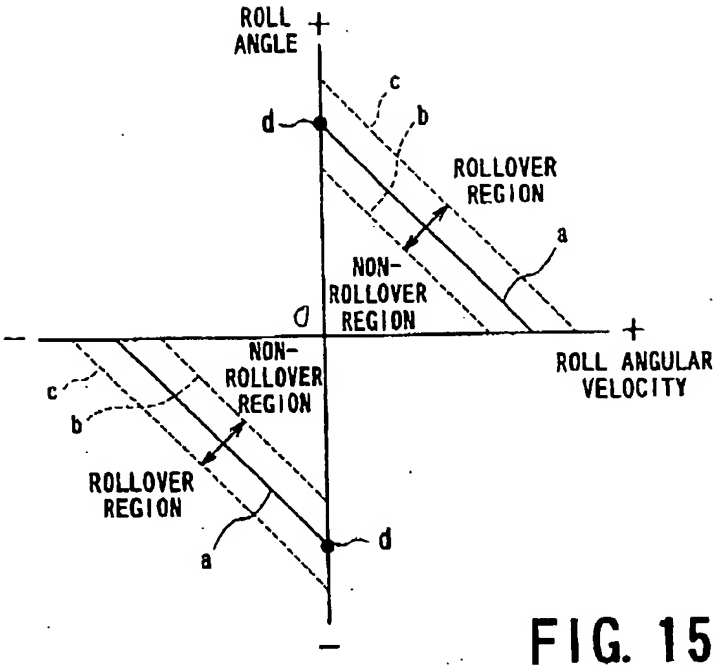

ROLL ANGLE
+
c
b
d
ROLLOVER REGION
a
NON-ROLLOVER REGION
0
+
ROLL ANGULAR VELOCITY
NON-ROLLOVER REGION
c
b
ROLLOVER REGION
a
d
−

FIG. 15

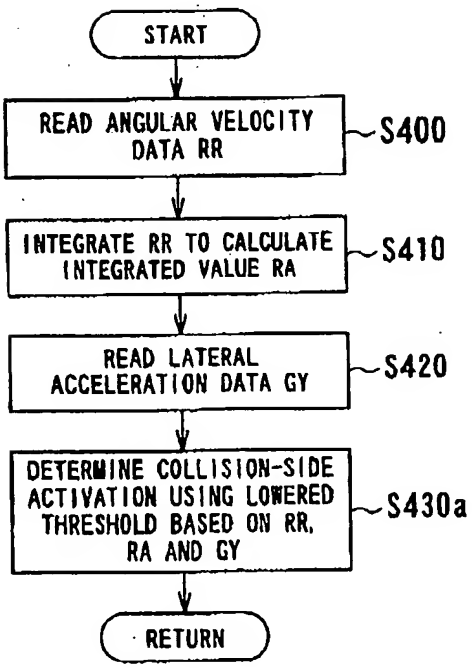

START
READ ANGULAR VELOCITY DATA RR
S400
INTEGRATE RR TO CALCULATE INTEGRATED VALUE RA
S410
READ LATERAL ACCELERATION DATA GY
S420
DETERMINE COLLISION-SIDE ACTIVATION USING LOWERED THRESHOLD BASED ON RR, RA AND GY
S430a
RETURN

FIG. 16